UPDATE 2013
California Water Plan Plenary
Department of Water Resources

CCST Role as State S&T Policy Advisors + Water

Jude Laspa
California Council on Science and Technology

The Role of CCST - Science and Technology in the State's Interest

- Not for profit, 501(c)3 comprised of over 200 of CA's top talent
- Committed to serving the State in all aspects of S&T
- Sustaining institutions: UC, CSU, CCC, Stanford, USC, Caltech
- Affiliate members: LBNL, LLNL, Sandia, SLAC, NASA Ames, JPL

CCST is Comprised of :

16 Board Members

30 Council Members (18 Academia, 8 Industry, 4 DOE/NASA)

136 Senior Fellows

12 Cal Teachers Advisory Council Members

10 S&T Policy Fellows

And includes:

3 Nobel Laureates

81 National Academies' Members

11 National Medal of Science or Technology

6 National Board Certified Teachers

Bringing expertise into the discussion

- CCST explores S&T issues that are profoundly important for California's future at meetings, bringing together expertise from CCST's ranks and elsewhere. We partner with others wherever possible

- CCST responds to requests for help from the Legislature and Executive branches of government

- CCST produces reports and recommendations, with a view towards specific agents of change and the long-term picture

- A broad footprint of activity that impacts policy discussions

CCST Explores S&T Issues
Science, Values, and Public Policy

- Many policy decisions have S&T components that policy makers are not trained to handle
- Clear communication, trust and accountability are paramount
- A technical topic is inherently difficult to explain
- Scientific method can be at odds with personal feelings such as outrage, irrational hope or groupthink

Select Recent CCST Activities

- Science And Technology Policy Fellows
- Smart Meters
- Cell Phones In The Prisons
- California Energy Futures
- Climate Change Research Data Base
- Innovate to Innovation (i2i)
  - Digital Education
  - Water

The Science and Technology Policy Fellows

- First state program in the nation placing Ph.D.-level or equivalent scientists and engineers in formal fellowship program in a state legislature (now in its third year)
- Modeled after AAAS Congressional S&T Fellows Program
- Up to 10 fellows/year selected for one-year appointments in Assembly and Senate legislative offices

California Science+Technology+Policy Fellowships 2011-2012

- Five placed in Assembly, five in Senate
- Activities this year range include everything from water issues, DNA testing to hydraulic fracturing
- 2 Fellows already have positions lined up after end of term

California Science+Technology+Policy Fellowships

"The Senate's standing committees and Chairs have uniformly expressed deep satisfaction with the many contributions of these highly-qualified Fellows to the policymaking work of the state Senate."

- Darrell Steinberg, President Pro Tempore, California State Senate, August 2011

FELLOWS WHERE ARE THEY NOW?

- State Senate – 4
- State Assembly – 3
- State Agencies – 3
- Public Health Officer – 1
- White House – 1
- Federal Energy Laboratory – 1
- Industry – 1
- Non-profits – 2
- Academia – 2

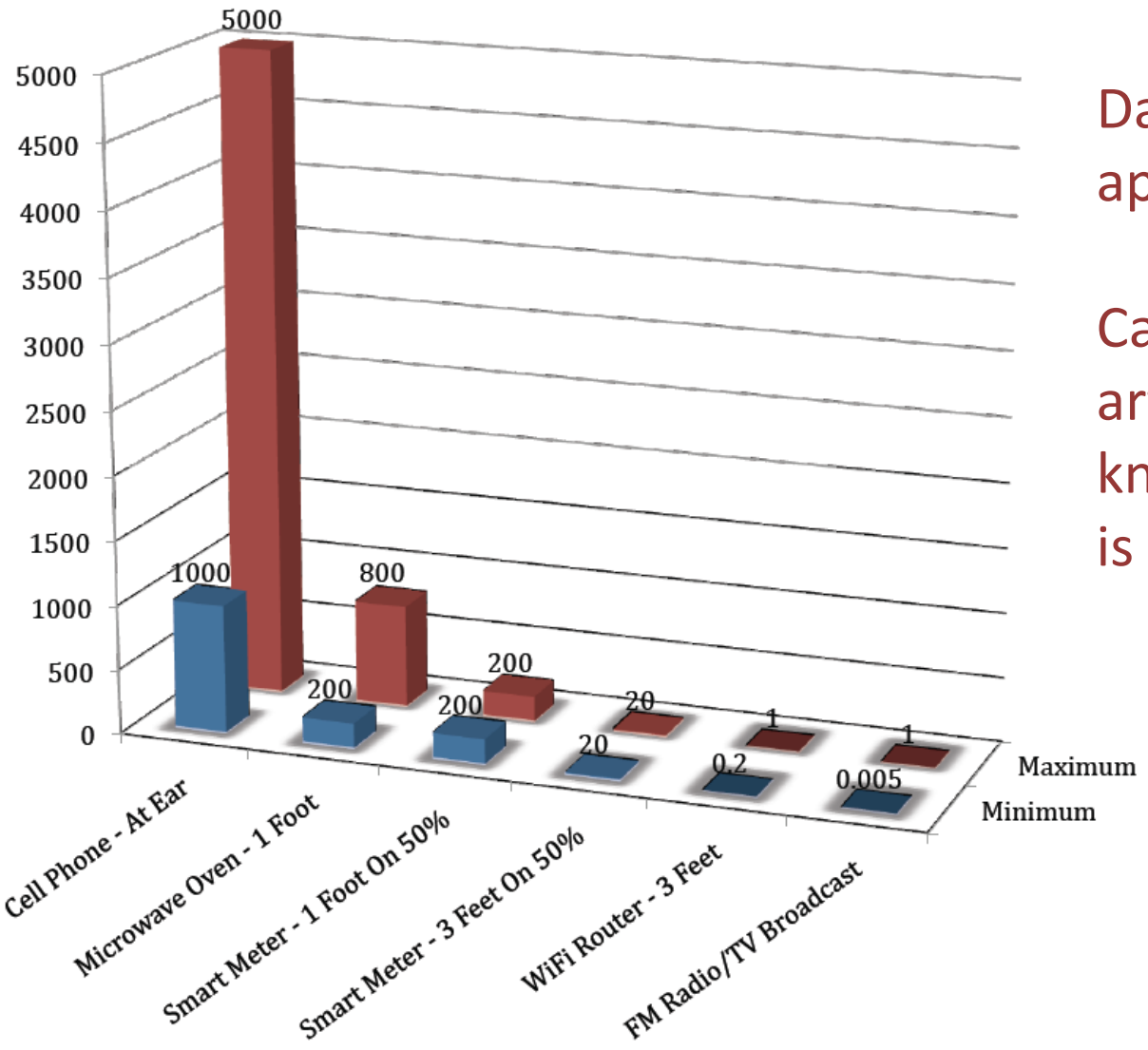
CCST Responds to Requests Smart Meters

- Assembly Members Huffman and Monning requested that CCST assist in determining if there are health safety issues regarding the new SmartMeters being installed by utilities

- CCST posted reviewed report on website and accepted comments through a web-based form

- Most respondents strongly opposed to the technology

smart meter project



Data-driven approach:

Careful to articulate what is known and what is not known

Instantaneous Radio Frequency Power Density Levels of Common Devices (microWatts/cm^2)

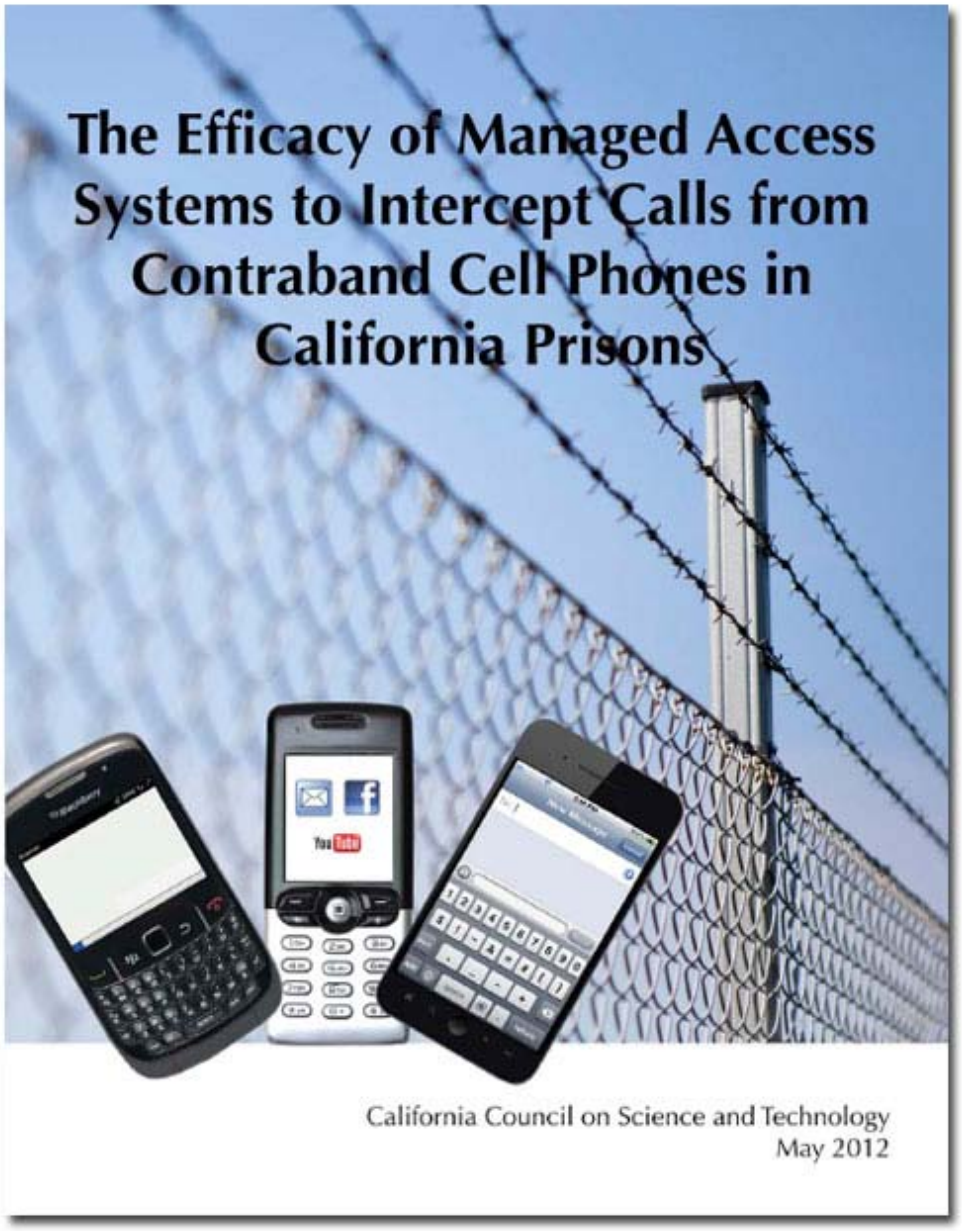
Key Report Findings

1. Wireless smart meters, when installed and properly maintained, result in much smaller levels of radio frequency (RF) exposure than many existing common household electronic devices, particularly cell phones and microwave ovens.

2. The current FCC standard provides an adequate factor of safety against *known thermally* induced health impacts of existing common household electronic devices and smart meters.

3. To date, scientific studies have not identified or confirmed negative health effects from *potential non-thermal* impacts of RF emissions such as those produced by existing common household electronic devices and smart meters.

4. Not enough is currently known about potential non---thermal impacts of radio frequency emissions to identify or recommend additional standards for such impacts



CCST Responds to Requests

Cell phones in prisons:

Technical challenges with policy implications

Contraband cell phones in prisons

- In July 2011 CCST received a letter requesting help in evaluating cell phone signal blocking technologies that the California Dept. of Corrections is proposing to install
- Cell phones possessed by inmates pose a serious threat to safety and security in prisons. In 2011, nearly 15,000 cell phones were confiscated.
- CCST asked to undertake independent, scientific evaluation to inform both policymakers and the public about the managed access technologies being considered

Detailing how Managed Access Systems work

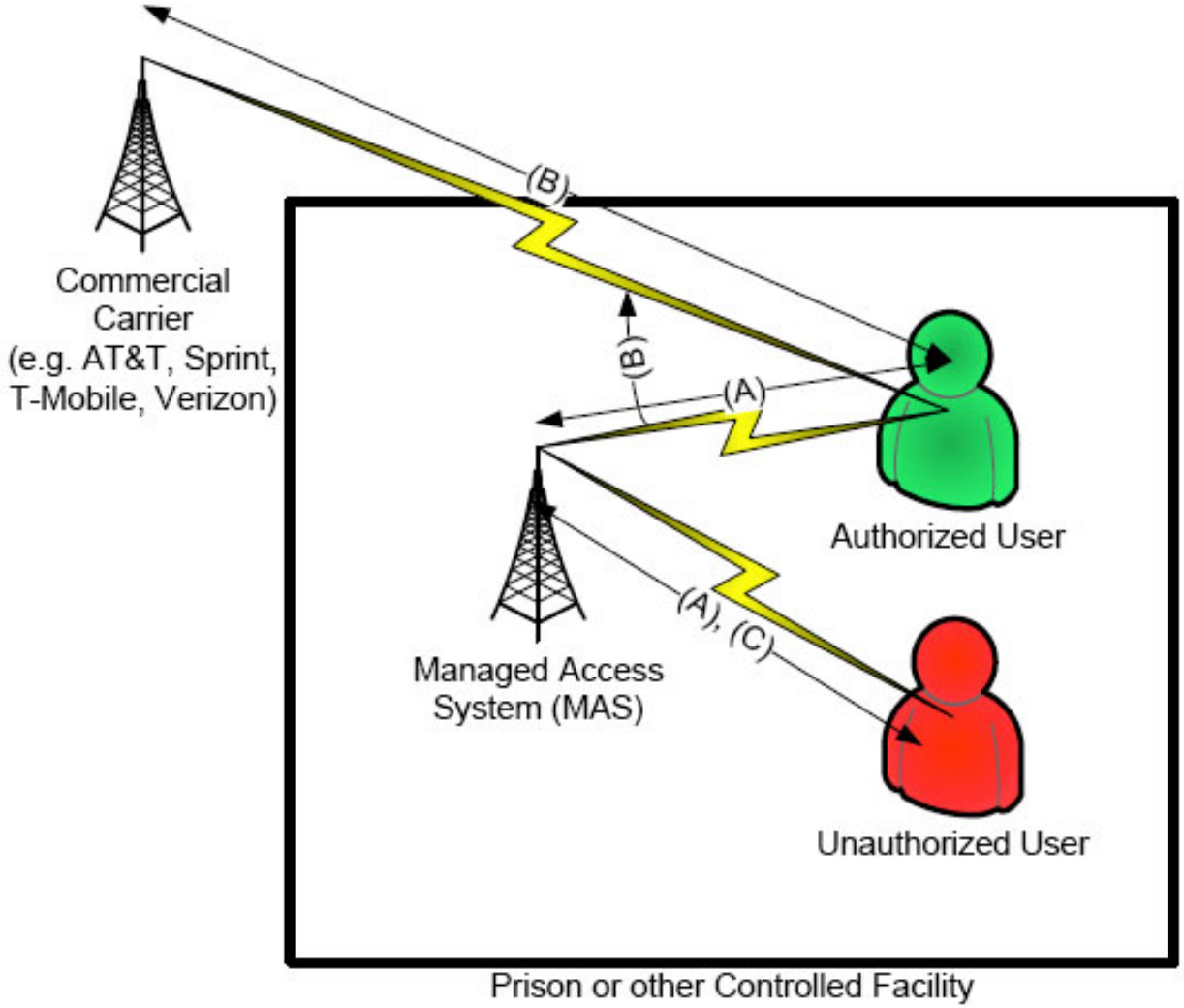


Figure 1. MAS would function as a system to detect and preclude the operation of cell phones not authorized in the MAS approved database

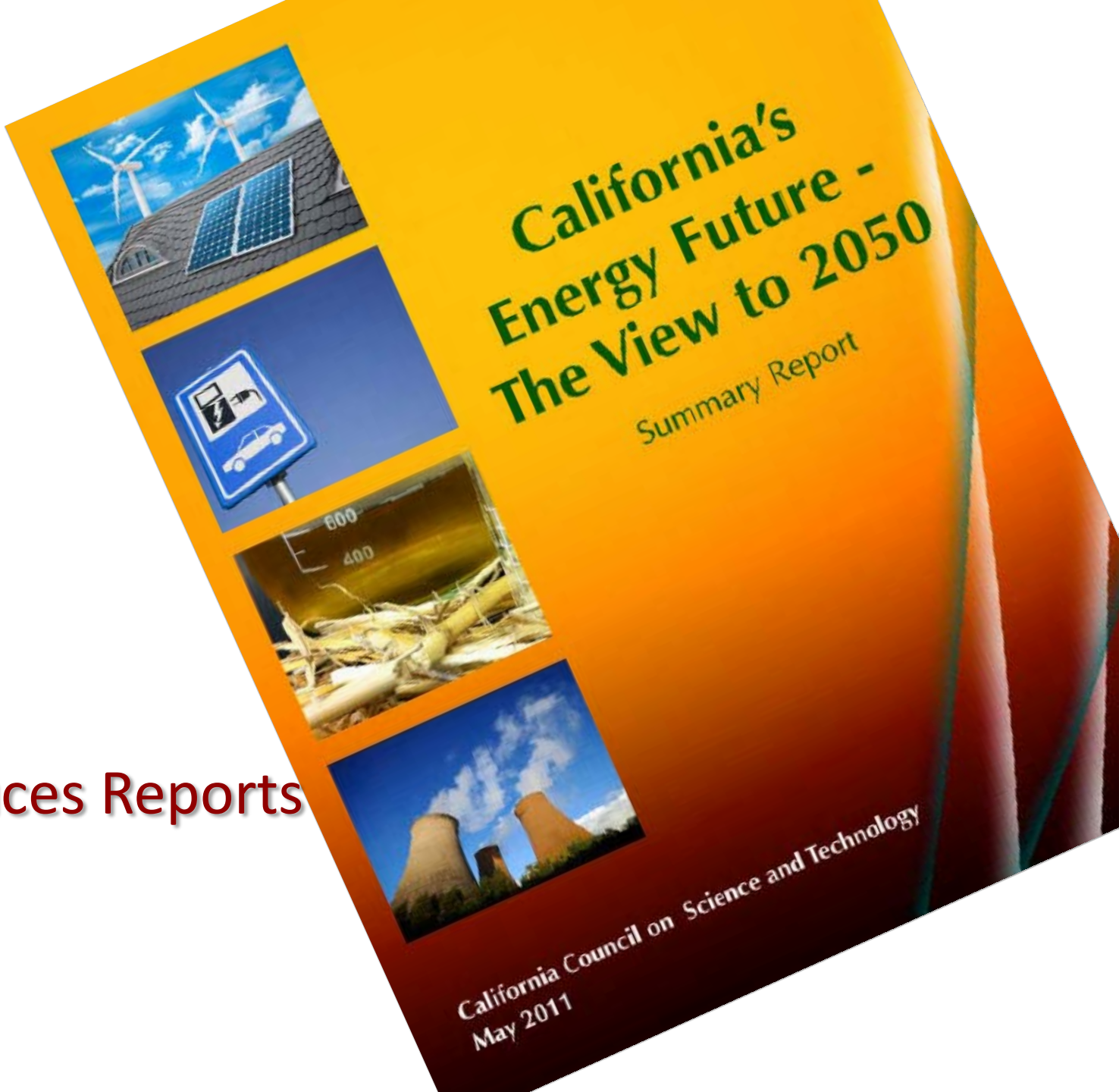
Key Findings

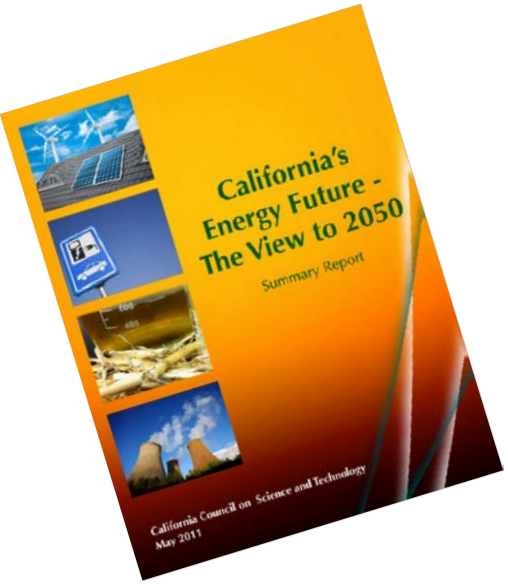
- Contraband cell phones in prisons are a growing state and national security issue.
- There is inconsistent screening at state prisons.
- There are existing and evolving complexities of signal capture.
- MAS technology is not yet proven for a prison environment.
- MAS efficacy protocols have not been defined.
- Baseline benchmarks are needed.

Recommendations

- Alternative options should be considered
- MAS, even if successfully deployed, won't be enough
- Assess cost/benefit of other options, including implementing the federal prisons screening protocols
- If MAS is purchased, test one or more pilots before contracting
- An independent consortium should be created to develop and oversee the MAS network
- Design, install, and monitor MAS pilots

CCST Produces Reports





Taking the long view – planning for situations decades ahead

Groupthink: Radical Carbon Emission Cuts for California

2005, executive order issued requiring the state to reduce its CO2 emissions to 80% below 1990 level by 2050.

Are technology and resources available, or likely to become available, to meet this goal?

The technology and knowledge exist to take the state most of the way (60%) to its ambitious 2050 goal, but more research will be needed to achieve full success.

California's Energy Future Detailed Reports

- "Transportation Energy Use" – released
- "Possibilities, Problems, and Potential Envisioned for Nuclear-Powered California in 2050" – released
- "Electricity from Renewable Energy and Fossil Fuels with Carbon Capture and Sequestration" – released
- "Building and Industrial Efficiency" – review stage
- Report on advanced technology nearly done
- Report on biofuels in the works

innovate 2 innovation

i2i Phase II report delivered via robot

- Study co-chaired by Charles Kennel and Julie Meier Wright
- Delivery of report in August 2011 via remote presence medical robot underscored the importance of innovation to California's future
- Widespread media coverage

innovate2 innovation

i2i Phase II Report Overall Summary Recommendations

- Develop and leverage public-private partnerships linking California's assets in education, research, technology, finance, and philanthropy to create social and technical innovations that competitors cannot match

- Enhance California's international competitiveness by enlisting S&T community in finding solutions to two of the State's major challenges: Education and Water

innovate2
innovation

i2i Water Phase II Report Recommendations

- Develop a California Water Future S&T Roadmap – a 10/25/50 year plan – and integrate it with the State's ongoing long-term water planning efforts

- Collaborate with Department of Water Resources as part of the CWP 2013 update to (focused thru the Water Technology Caucus) to identify and expand information associated with statewide and regional needs, opportunities, and challenges for developing and implementing new water technologies in California

Science and Technology Innovation for California's Water Future

- i2i Phase III Water Technology Project team:
  - Jude Laspa (Chair)
  - Bryan Hannegan (EPRI)
  - Soroosh Sorooshian (UCI)
  - Bob Wilkinson (UCSB)
  - David Zoldoske (CSU Fresno)
  - Karl Longley (CSU Fresno – Project Manager)
  - Danny DeCillis (CCST Project Researcher)

i2i Phase III Water Technology Project Goals

- Identify technology innovation and/or systems approaches that can be used in CA, on a statewide, regional, local, or project basis, within the next five to ten years. Utilize a survey tool supplemented by interviews and focus groups to collect input data and map technologies.
- Identify agents responsible for adoption of recommendations and inform technology planning, actions, pilot projects and investments:
  - Federal and State, regional, local governments & agencies
  - Tribal groups and Non-governmental organizations
  - Others
- Make specific recommendations on policy and process changes needed to incorporate identified innovations

Status of Phase III i2i Water Project

- This Project has three phases:
  - Phase 1: Scope – Identify innovative technology and/or system approaches that can be used to address state priorities
    - Survey currently underway. Have you completed yours?
  - Phase 2: Scan – Develop an inventory of innovative technology (online database), map technologies by type and feasibility
  - Phase 3: Summarize – Develop key findings and recommendations

Mapping Technology Ideas

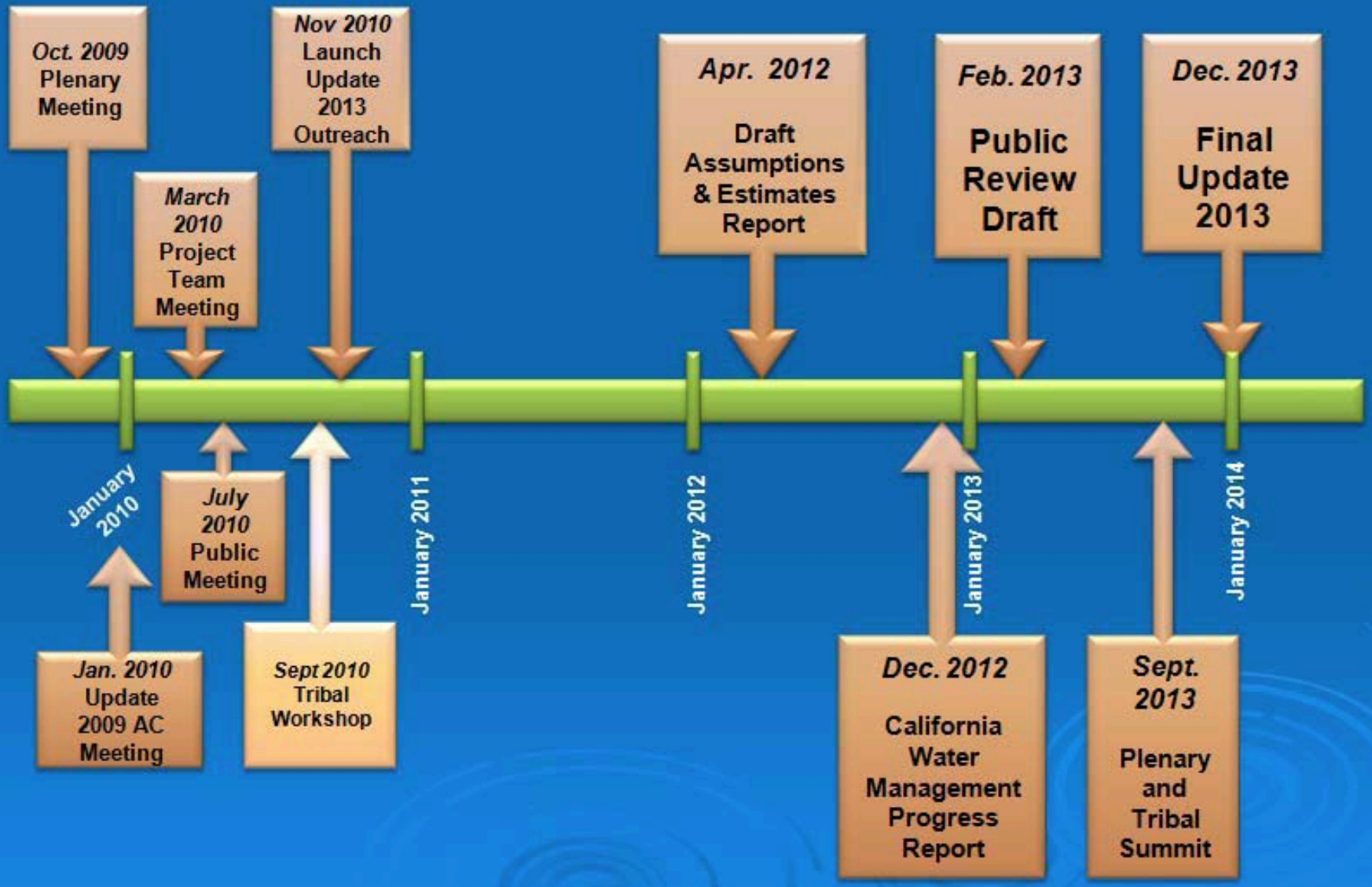
Target Areas

- Agriculture
- Urban
- Groundwater & Surface Water
- Water Quality
- The Delta & Other Sensitive Areas
- Disadvantaged Communities

Technology Ideas

- Efficiency & Reuse
- Remote Sensing/Large Data
- Biological (bugs)
- Groundwater Recharge
- Desalination & Membranes
- System Applications
- Storage
- Habitat Restoration
- Water-Energy Nexus

Scoping & Deliverables



i2i Water Project

Survey

Open to all members of the S&T community with an expertise or professional interest in water, water technologies, or water management. Responses requested by September 17, 2012.

Please visit http://ccst.us/projects/survey-E.php

Responses will be treated as confidential.